

ABSTRACT OF THE INVENTION

A method and apparatus for the removal of a broken stud from a cylinder head, and rehabilitation thereof, includes a precise alignment block for attachment to at least two intact studs or stud bores of a cylinder head for alignment of a pilot port over the broken stud. Further holes in the block along the length of the block match a stud pattern of a cylinder head of pre-determined stud spacing. The apparatus comprises a series of replaceable steady pilots and corresponding rotary tools in pairs, including an end mill and cooperating milling pilot for flat or concave milling of the end of the broken stud; a drill bit and cooperating drilling pilot for drilling the end of the broken stud; and a tap and cooperating threaded tapping pilot to form new threads in the cylinder head for accepting a new replacement stud. Optionally, a threaded coil insert can be used in the newly prepared stud bore, having outer threads matching the new threads and having inner threads matching a replacement stud.